

## **SCHIZOMUS SIAMENSIS (SCHIZOMIDA: SCHIZOMIDAE) FROM EASTERN ASIA AND HAWAII**

**James C. COKENDOLPHER**

Department of Entomology, Texas Tech University,  
Lubbock, Texas 79409, U. S. A.

**and**

**James R. REDDELL**

Texas Memorial Museum, The University of Texas at Austin,  
2400 Trinity, Austin, Texas 78705, U. S. A.

### **Synopsis**

COKENDOLPHER, James C. (Department of Entomology, Texas Tech University, Lubbock, Texas 79409, U. S. A.) and James R. REDDELL (Texas Memorial Museum, The University of Texas at Austin, 2400 Trinity, Austin, Texas 78705, U. S. A.) : *Schizomus siamensis* (Schizomida : Schizomidae) from eastern Asia and Hawaii. *Acta arachnol.*, 35 : 23-28 (1986).

A male lectotype and paralectotypes (male and female) are designated from material collected in Thailand. A complete synonymy and records from Hong Kong, Ryukyu Islands of Japan, and Hawaiian Islands of U. S. A. are provided. The female genitalia is illustrated for the first time.

Schizomids from eastern Asia have been transferred back and forth from *Schizomus* COOK to *Trithyreus* KRAEPELIN without knowledge of the type species of either genus [see SEKIGUCHI and YAMASAKI (1975) and REDDELL and COKENDOLPHER (1985) for a review of the problem.] We have studied type specimens of these species and find that both genera are distinct, but that they can not be separated on the basis of the metapeltidium (split or entire) (REDDELL and COKENDOLPHER, 1985, and unpubl. data). Authors of recent papers on *Schizomus siamensis* have incorrectly placed this species in *Trithyreus*. It is the purpose of this contribution to record as complete as possible all collection locali-

ties and to provide a complete synonymy. Additional descriptive data and the first illustration of the female spermathecae will also be presented.

***Schizomus siamensis* (HANSEN, in HANSEN and SÖRENSEN)**

[Japanese name: Udenaga-sawada-mushi]

*Trithyreus siamensis* HANSEN, in HANSEN and SÖRENSEN, 1905: 51-52, 57-59, 61, 65, 75-76, pl. 5 (fig. 2a-h); KISHIDA, 1930: 18; GILTAY, 1935: 8; TAKASHIMA, 1941: 96; RÉMY, 1961: 406-407, 413; BRIGNOLI, 1974: 734-735; YAMASAKI and SHIMOJANA, 1974: 175, 180-185, figs. 12-23 (in part—not Taiwan record); MORITZ and FISCHER, 1980: 139; SHIMOJANA, 1982: 46.

*Schizomus siamensis*: HANSEN and SÖRENSEN, 1905: 15 (*lapsus* for *Trithyreus*); MELLO-LEITÃO, 1931: 18; SHIMOJANA, 1973: 12; ROWLAND and REDDELL, 1977: 80.

*Schizomus* [*Trithyreus*] *siamensis*: SILVESTRI, 1947: 29-30, fig. IX.

*Trithyreus* sp.: SHIMOJANA, 1972: 100-103, figs. 3-5.

*Trityreus?* sp.: HOWARTH and MONTGOMERY, 1982: 8.

Type data: Male lectotype, male paralectotype (lacks flagellum), 2 female paralectotypes from: Krung Thep (=Bangkok), Phra Nakhon Changwat, Thailand, pre-1905, leg. E. HAASE (ZMB no. 7154, examined). The lectotype has been placed in a separate vial from the paralectotypes.

Other records: HONG KONG: Kowloon Peninsula: Taipo (at market), 1 male, 1 female (museum?; SILVESTRI, 1947). JAPAN: Okinawa Prefecture: Ryûkyû-shotô (=Ryukyu Islands): Miyako-jima: Muzuka-gaa Cave, Higashinaka, Hirara-shi, 1 male, 1 immature (NSMT no. 59, examined); Iza-gaa Cave, Higashinaka, Hirara-shi, 2 females, 2 immatures (NSMT nos. 55, 56, examined). Okinawa-jima: Mayaa-abu Cave, Mashiki, Ginowan-shi, 1 male, 1 immature female (NSMT nos. 57, 58, examined), 1 male (Texas Memorial Mus., examined).

New records: U. S. A.: Hawaii: Oahu, Honolulu County, University of Hawaii Manoa Campus, Quarry Cave (12 m), dark zone on grain bait, 19 February 1979 (F. G. HOWARTH, S. L. MONTGOMERY), 2 males, 2 females, 1 immature (BPBM); dark zone, 24 February 1979 (F. G. HOWARTH, S. L. MONTGOMERY), 3 males, 2 females, 7 immatures (BPBM, Texas Memorial Mus.); 7 March 1979 (F. G. HOWARTH), 2 females, 1 immature, 1 molt (BPBM); dark zone in earthen cell under rock, 7 March 1979 (F. G. HOWARTH), 1 female, 6 larvae (BPBM); dark zone at fish bait, 13 March 1979 (F. G. HOWARTH), 1 female (BPBM); 17 March 1979 (F. G. HOWARTH), 1 female (BPBM); Moiliili Cave (15 m), pitfall no. 4, dark zone, 24 March to 27 April 1983 (F. G. HOWARTH, F. D. STONE), 4, males,

25 females (BPBM), 2 males, 2 females (Texas Memorial Mus.); 24 March 1983 (F. D. STONE), 2 males, 6 females, 1 immature (BPBM).

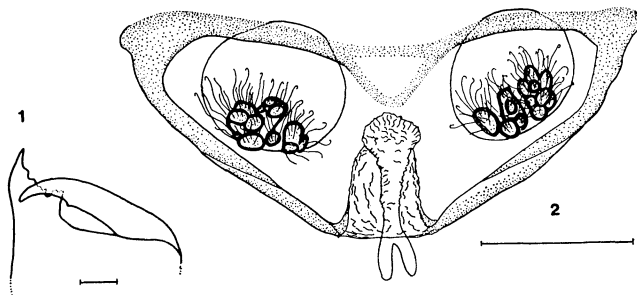
**Distribution:** This species is known for certain from Thailand, Ryukyu Islands of Japan, and Hawaiian Islands of U. S. A. The Hong Kong collection reported by SILVESTRI (1947) is probably correct as he had examples of both sexes. We have not been able to locate these specimens for examination. The female reported by YAMASAKI and SHIMOJANA (1974) from Taiwan: Ping-tung Hsien, Kuei-chiao-liu, Yinchuan-tsang-hsia-tung Cave (NSMT no. 60, examined), is not this species. A forthcoming paper will describe the Taiwan specimens as a species new to science.

**Description:** The major features of *S. siamensis* have been described and illustrated by HANSEN and SÖRENSEN (1905), YAMASAKI and SHIMOJANA (1974), and SHIMOJANA (1972). It is only necessary here to add some supplemental data on the chelicerae, carapacial setation, and the female genitalia.

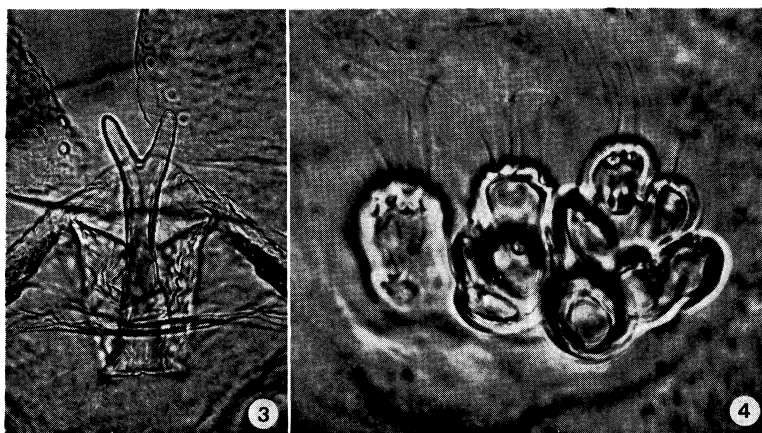
The illustrations and descriptions of the chelicerae by previous authors failed to demonstrate the presence of a tooth on the movable finger. This tooth is best observed on the lateral side (Fig. 1).

Specimens from the Ryukyu Islands have three or four pairs of dorsal setae on the carapace, whereas the specimens from the Hawaiian Islands typically have four pair, but a few individuals had five pair.

The female gonopod (nomenclature follows BÖRNER, 1904) (Figs. 2, 3) is unique among the schizomids thus far illustrated by being long, retractable, and bifurcate. This apophysis was constant throughout all females examined of this species. The form of the spermathecae were similar (Figs. 2-4), but the number



Figs. 1-2. *Schizomus siamensis*—1: male paralectotype, outline diagram of distal end of chelicera. 2: female spermathecae and gonopod. Scale lines=0.1 mm.



Figs. 3-4. *Schizomus siamensis*, female—3: Detail of gonopod. 4: Detail of spermathecal lobes.

of lobes varied. A female from each locality was examined and the spermathecal lobes were counted. Each specimen had 3 or 4 main lobes per spermatheca and these lobes often had smaller lobes. The number of main lobes differed per side, but a consistent pattern relative to side was not determined. Numbering from the side farthest the gonopod the number of smaller lobes per main lobe were (2-7), (1-4), (1-3), and (0-1). These numbers likewise showed no apparent trends.

Notes: Males from Mayaa-abu Cave, Okinawa-hontô, differ somewhat from males from other localities. It is because of these differences that YAMASAKI and SHIMOJANA (1974) reported an adult as an immature. The specimen illustrated and described by SHIMOJANA (1972) is a fully adult male. It is smaller than typical examples from other localities and the lobes on the flagellum are more rounded, especially the anterio-lateral margins [compare Fig. 5H in SHIMOJANA (1972) with Fig. 20 in YAMASAKI and SHIMOJANA (1974)]. The female reported from Mayaa-abu Cave by the above mentioned authors is, based on examination of the genital sternite, a penultimate female. The male in the Texas Memorial Museum from Mayaa-abu Cave is more typical in size and coloration (other male is presumably newly molted and thus lighter pigmented), but it shows the same rounded margins and lobes as the smaller male. Examination of the spermathecae from an adult from this cave should be beneficial in understanding this variation. The metapeltidium may be separated into two plates by a thin division or a faint white line, or completely unseparated. All

three character states are present in the Hawaiian material studied.

Natural history: The specimens reported from Japan were all from limestone caves and are presumed to be troglophiles by YAMASAKI and SHIMOJANA (1974). The Hawaiian specimens were taken from a section of a limestone solution cave in which the roof had collapsed. The individuals were found on the soil and rock slope and hiding beneath rocks. Others were collected on grain or fish bait and some were taken from pitfall traps. HOWARTH (pers. comm.) reported that the entrance to Quarry Cave has been filled, but that Moiliili Cave is probably a part of the same system, whether a physical connection is possible or not. Moiliili Cave is very heavily polluted. A female carrying six juveniles was found in an earthen cell attached to the underside of a flat rock (HOWARTH and MONTGOMERY, 1982). SILVESTRI (1947) reported this species from the nest of *Macrotermes barneyi* LIGHT in Hong Kong.

### Acknowledgements

We thank Dr. F. G. HOWARTH, Bernice P. Bishop Museum, Honolulu (BPBM); Dr. Manfred MORITZ, Zoologischen Museums der Humboldt-Universität, Berlin (ZMB); and Dr. Hirotugu ONO, National Science Museum, Tokyo (NSMT), for the loan of specimens. Dr. W. David SISSOM carefully reviewed the manuscript. Dr. Nobuo TSURUSAKI aided us by translating sections of some papers and kindly provided the Japanese synopsis.

### 摘 要

COKENDOLPHER, James C. (Department of Entomology, Texas Tech University, Lubbock, Texas 79409, U.S.A.) and James R. REDDELL (Texas Memorial Museum, The University of Texas at Austin, 2400 Trinity, Austin, Texas 78705, U.S.A.): アジア東部およびハワイの *Schizomus siamensis* (ヤイトムシ目: ヤイトムシ科)。

タイにおいて採集された材料に基づいて *Schizomus siamensis* の後模式標本(雄)と副後模式標本(雌雄)を指定し、本種のシノニムのすべてと、その香港、琉球列島およびハワイ諸島からの記録を列挙した。また、本種の雌の生殖器をはじめて図示した。

### References

- BÖRNER, C., 1904. Beiträge zur Morphologie der Arthropoden I. Ein Beitrag zur Kenntnis der Pedipalpen. *Zoologica*, Stuttgart, 42: 1-174, 7 pls.  
 BRIGNOLI, P.M., 1974. Un nuovo Schizomida delle Batu Caves in Malesia (Arachnida, Schizomida). *Rev. Suisse Zool.*, 81: 731-735.

- GILTAY, L., 1935. Notes arachnologiques africaines. VII. Description d'un Pédipalpe nouveau du Congo belge (*Trithyreus ghesquierei*, n. sp.). *Bull. Mus. roy. Hist. Nat. Belgique*, Bruxelles, 11(32) : 1-8.
- HANSEN, H. J. & W. SÖRENSEN, 1905. The Tartarides, a tribe of the order Pedipalpi. *Ark. Zool.*, 2(8) : 1-78, 7 pls.
- HOWARTH, F. G. & S. L. MONTGOMERY, 1982. *Trithyreus?* sp. (Schizomidae : Schizomida). *Proc. Hawaiian Entomol. Soc.*, 24 : 8.
- KISHIDA, K., 1930. On the occurrence of the genus *Trithyreus* in Bonin Islands. *Lansania*, 2(12) : 17-19. (In Japanese.)
- MELLO-LEITÃO, C., 1931. Pedipalpos do Brasil e algumas notas sobre a ordem. *Arch. Mus. Nac.*, Rio de Janeiro, 33 : 9-72, 5 pls.
- MORITZ, M. & S.-C. FISCHER, 1980. Die Typen der Archniden-Sammlung des Zoologischen Museums Berlin II. Uropygi, Amblypygi, Schizomida, Ricinulei, Solifuga. *Mitt. Zool. Mus. Berlin*, 56 : 137-154.
- REDDELL, J. R. & J. C. COKENDOLPHER, 1985. Redescription of *Trithyreus grassii* (Arachnida : Schizomida : Schizomidae). *Oriental Ins.*, 18(1984) : 43-52.
- RÉMY, P., 1961. Sur l'écologie des Schizomides (Arachn. Uropyges) de mes récoltes, avec description de trois *Schizomus* nouveaux, capturés par J. Van der Drift au Surinam. *Bull. Mus. Nat. Hist. Natur.*, 2<sup>e</sup> ser., 33 : 406-414.
- ROWLAND, J. M. & J. R. REDDELL, 1977. A review of the cavernicole Schizomida (Arachnida) of México, Guatemala, and Belize. *Assoc. Mexican Cave Stud. Bull.*, 6 : 79-102.
- SEKIGUCHI, K. & T. YAMASAKI, 1975. The taxonomic status of "*Schizomus sawadai*" (Schizomida : Schizomidae). *Acta arachnol.*, 26 : 79-80.
- SHIMOJANA, M., 1972. Distribution of Arachnida in the Ryukyu Islands. *Idén*, Tokyo, 26(5) : 100-106. (In Japanese.)
- , 1973. Results of the speleological survey in Yaeyama Islands. *Okinawa Assoc. Biol. Educ.*, (6) : 1-26. (In Japanese.)
- , 1982. On the regression of the eyes of arachnids from the caves in the Ryukyu Islands. *Atypus*, (81) : 45-46. (In Japanese.)
- SILVESTRI, F., 1947. Seconda nota su alcuni termitofili dell' Indochina con una appendice sul *Macrotermes Barneyi* LIGHT. *Boll. Lab. Entomol. Agr. Portici*, 7 : 13-40.
- TAKASHIMA, H., 1941. Supplementary notes on our knowledge of Scorpionida and Pedipalpi. *Acta arachnol.*, 6 : 87-98. (In Japanese.)
- YAMASAKI, T. & M. SHIMOJANA, 1974. Two schizomid whip-scorpions (Schizomida, Schizomidae) found in limestone caves of the Ryukyu Islands and Taiwan. *Annot. zool. japon.*, 47 : 175-186.